DOCUMENT RESUME

ED 262 801 IR 051 312

TITLE IFLA General Conference, 1985. Division on Education and Research. Section on Library Theory and Research. Papers.

INSTITUTION International Federation of Library Associations, The Hague (Netherlands).

PUB DATE Aug 85

NOTE 74p.; Papers presented at the International Federation of Library Associations (IFLA) General Conference (51st, Chicago, IL, August 18-24, 1985).

PUB TYPE Viewpoints (120) -- Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC03 Plus Postage.

DESCRIPTORS Academic Libraries; *Community Information Services; Foreign Countries; Higher Education; *Information Needs; *Information Services; *International Organizations; Library Administration; Library Associations; *Library Education; Library Research; Long Range Planning; Position Papers; Public Libraries; Regional Planning

IDENTIFIERS Bradford Law of Scatter

ABSTRACT

Papers on library theory and research presented at the 1985 International Federation of Library Associations (IFLA) conference include: (1) "Information for Self Reliance and Self Determination: The Role of Community Information Services" (Elaine Kempson, Acumen, United Kingdom); (2) "Relationships between Practice, Education and Research in the Library/Information Sphere" (Marjatta Okko, University of Tampere, Finland); (3) "The Law of Bradford" (Leo Egghe, Limburgs Universitair Centrum, Belgium); (4) "Management and the Conduct of In-House Library Research" (G. G. Allen, Western Australian Institute of Technology, Australia); and (5) "The Role of Information in National Development Planning" (Brian J. Perry, British Library Research and Development Department, United Kingdom). (THC)

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IFLA
1985

IFLA GENERAL CONFERENCE, CHICAGO

Division: Education and Research

Section: LIBRARY THEORY AND RESEARCH

1-THEOR-1-E

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INFORMATION FOR SELF RELIANCE AND SELF DETERMINATION
The role of community information services.

By

Elaine Kempson

Acumen
Brompton Ralph
Taunton TA4 2RU
England

IR051312

KEYWORD(S):

Community information
Public libraries
Self reliance
Information services
Self determination

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INFORMATION FOR SELF RELIANCE AND SELF DETERMINATION. THE ROLE OF COMMUNITY INFORMATION SERVICES.

The concept of self-reliance and self determination will be very familiar to most people who come from a developing country, especially one recently emerged from colonial rule. I believe, however, that these concepts are equally relevant for all countries. Communities, and the individuals within them, should have a far greater say in the decisions which affect their lives and a greater control over the ways in which their lives develop. To do so requires that they are both well-informed and have the means to act on that information.

There has been a recent surge of interest in meeting the everyday information needs of ordinary people. More especially that interest has focussed on groups within society who are considered to be socially and economically disadvantaged. The term that is used for information services which are provided to meet their needs is "Community information."

One of the most succinct definitions of community information services was evolved by a working party of the British Library Association.

> Services which assist individuals and groups with daily problem solving and with participation in the democratic process. The services concentrate on the needs of those who do not have ready access to other sources of assistance, and on the most important problems that people have to face, problems to do with their homes, their jobs and their rights.(1)

Saracevic, writing in the context of developing countries, has evolved the concept of "appropriate information". Appropriate information, he says,

> Should be problem-oriented, self-contained, directly applicable, scaled for local use, able to reach the disadvantaged and communicable through traditional channels.(2)

So much for definitions. Before going on to consider what type of community information services are required, it is important to look at the information needs they will be trying to meet.

Information needs

A wide range of studies in Jamaica(3), Britain (4,5,6,7,8) and the United States(9,10,11,12) all indicate a very high level of need. The periods of time surveyed vary, but, generally speaking, between a half and two thirds of the people interviewed said that they had needed information for their daily lives during the preceding few months. There is good reason to believe that high levels of need also exist generally within both developed and developing countries such as Nigeria(13,14), Tanzania(15), Sri Lanka(16) and Uganda(17).

A number of research projects have set out to identify the areas of greatest need for information. Research in Nigeria identified the following main areas: health, occupation, problems of daily existence such as water supply, electricity and roads, employment problems and opportunities, education, religion and recreation and leisure(13).

In contrast, the main needs identified in Papua New Guinea related to small scale economic development and community welfare. However, unlike Nigeria, a need for information on health was voiced by only a small number of people, and for information in the recreational field by even fewer(18,19).

In Britain the most common information needs are to do with housing, consumer matters, income maintenance, family and personal matters and employment(4,6,20).

Finally, in the United States the most commonly mentioned needs were for information on consumer issues, getting and changing jobs, housing and household maintenance and education and schooling(9).

So, it is clear both that ordinary citizens h[illegible] high level of need for information. The precise nature of that need depends on the type of society in which they live, but in general, it is for information which serves most functional purposes. That is, information which helps people to improve their quality of life either directly by solving an immediate problem, or in the longer term by helping them to influence decisions which will affect their lives. The information is, therefore, needed by both individuals and groups of individuals.

Meeting information needs

In designing any information service it is important to discover not only the extent and nature of the need for information, but also the ways in which that need is currently being satisfied.

The evidence indicates, overwhelmingly, that when faced with the need for information people turn first to their oral culture. That this should be so in rural communities in a developing country is not perhaps surprising, since often fewer than 10% of such people will be literate and the societies are, in any case, less complicated(21,22).

Research has shown, however, that the same patterns of information seeking exist in rural villages in Papua New Guinea(18,19) in both rural and urban populations in

Jamaica(3) and also in Great Britain(7,23,24) and the United States(9,10,11,12). When faced with a need for information or a problem in their daily lives the first, and often the only, sources that people will contact for information and help are their family, their friends and neighbours and, in some circumstances, the leaders of their community. This seems to be true even where there are a range of agencies, including libraries, which purport to be able to meet those needs. Recent research carried out in the United States indicates that people prefer these informal information providers because they are "open, unstructured and readily accessible".(19)

At the same time, there is evidence that people are not always satisfied with the information they receive through these informal channels(23). There are, in fact, a number of reasons why the traditional oral means of acquiring information are becoming inadequate.

The inadequacy informal information sources

Firstly, as societies become more complex the systems they develop conferring rights and responsibilities on their citizens become correspondingly more complex. It is therefore increasingly difficult for local communities to be aware of all the information which individuals within them are likely to need to know.

Information needed within communities is no longer restricted to locally based information, which can be passed on by word of mouth. Much of it relates to legislation and programmes developed by centralised government or to knowledge generated outside the local community.

The complicated welfare benefits system in Britain is a good example. In total there are 48 different benefits a poor person could possibly be entitled to. The amount of money

they would receive is calculated from the level of their income and the level of their savings, and their eligibility depends on a large range of other factors such as health, size of family and state of their housing. Little wonder that large amounts of money go unclaimed(24) and that we now have computerised information systems that will help people to calculate their possible entitlement(25). A similar lack of awareness of basic rights has been revealed in other subject areas in Britain(7,24,26,27).

Research in Papua New Guinea has identified a failure of governments to communicate information on their programmes to local villages(18,19).

A study in Jamaica which investigated the awareness of social programmes concluded that the level of knowledge was "depressingly low" in urban as well as rural communities(3). The only area where programmes were well-known was literacy. Eighty-two percent of people interviewed were aware of the national literacy scheme JAMAL. Otherwise fewer than a third of the people could name a social programme for either elderly, unemployed, young or handicapped people.

Similarly a project which studied the knowledge of relief scheme information by Sri Lankan farmers concluded that,

> There are major defects in this scheme of vital information transfer... The sheer multiplicity of points of processing, combined with procedures imposed by the bureaucracy causes undue delay. The decision making process which is carried out centrally adds to the confusion.(16)

Not surprisingly the research showed very high levels of ignorance of the relief scheme.

This brings me to the second reason why informal channels of information are no longer adequate. Access to information is not equal throughout society. In any society large sections of people will lack access to information. These same people are usually those who are disadvantaged in terms of low incomes, poor housing and other basic facilities, poor levels of education and poor health. In general, sources of information and the whole machinery of society have been evolved to meet the needs of a wealthy and more highly educated elite.

This manifests itself in a number of ways.

- Dissemination of information is primarily through printed materials which are often unreadable, written in the languages of the ruling elite and do not relate to the needs of ordinary people. Underlying this development is an assumption that we have had a culture based on the written word for centuries. Nothing could be further from the truth. It is true that we have had written materials for many centuries, but these have been reserved for an elite - an elite which has used its written culture to produce laws and to administer the mass of the people. Yet it has been estimated that one third of the world's population is functionally illiterate(22), and in some countries this proportion can be as high as 90%.

  Even where people are literate much of the printed information is unreadable by them. Recent years have seen a mushrooming of plain language movements, campaigning for official leaflets and forms to be written in a simple easy to read style.

Others will be denied access to information either because they are not literate in the language used by government, or because their native language does not exist in a written form. In parts of Africa this problem is especially acute. English and French are the two most widely used languages of government but cannot be read by 95% of the population. At the same time 600 of the 1200 local languages do not exist in writing and probably have not been transcribed(28). Until quite recently people who have now been labelled illiterate have always participated fully in the development of their society. Now these people are denied that right(22).

It is not only the language of printed information which causes problems. So too does the content. Much of it has been written by experts for experts, little of it relates to the needs of ordinary people(18,19,29).

- Professionals who are responsible for providing information and assistance to communities - government officials, lawyers, accountants and even librarians - are frequently inexperienced and unaware of the needs of poorer sections of the community(16).

- The final reason why access to information is unequal is that, generally speaking, there is little true freedom of information. There are notable exceptions, but for every one of these, there are many countries where censorship on economic, political or religious grounds is an integral part of the social structure. An interesting study was carried out by students at the library school in Denmark. Denmark prides itself as being one of the few countries with a Freedom of Information Act. Yet when the students analysed the information held by the various groups involved in

an urban renewal project - local government officials, building firm contractors and local residents - they found that local residents had managed to acquire very little information(30).

And so to the final reason why informal information channels and means of resolving problems are no longer adequate. As societies become more complex the systems they create frequently become more and more bureaucratic and less and less benevolent.

- They are administered by overworked and harassed officials. In very many countries these officials will have become, through education, socially isolated from the people they serve and out of touch with their needs. Frequently there is no easy means of redress against the decisions of such officials.

- Frequently, too, there will be a conflict of interests for example between a government wanting farmers to grow more cash crops and the farmers' own desire for their community to be self-sufficient in food. Or, between a local building firm which wants to redevelop an area of a city and the local people who do not want their community destroyed. Whilst legal machinery often exists to resolve such conflicts it is frequently financially inaccessible by large numbers of people.

- Added to this, whilst solutions usually exist to the main problems and concerns of ordinary people, ruling elites often consider them not to be feasible economically. Witness the money spent on armaments whilst people go hungry, live in poor-standard housing and have inadequate health care.

So, to summarise. Traditionally people have turned to relatives, friends and neighbours for information and help. As societies become more complex these sources are inadequate because,

- social structures, rights and responsibilities become more complex.
- there is an unequal distribution of information and
- the systems created become more bureaucratic and less benevolent.

Ironically, then, the development of societies so that they provide benefits and services for their people frequently leads to a complex system that is inaccessible to all but an elite.

The role of public libraries

How then do we begin to provide information services which can help people both to participate in the running of society and to take a more equal share of the benefits of the development of society?

A great deal has been written, and even more spoken, about the role of public libraries in the provision of community information services. It is argued that it is the general public who need community information, public libraries exist to serve the general public, therefore it follows that public libraries are the natural agency to provide community information services.

The primary motivation for this has been a desire to enhance the role of the public library. This is particularly so when public libraries are faced by what is seen as competition from other agencies who also serve the general public and

therefore conclude that they, too, are the natural agency to provide information services. Such agencies would include, for example, agricultural or health extension workers in developing countries and community-based information and advice agencies in countries like Britain, Australia and the United States. Only rarely is the motivation a genuine social and political commitment to redressing the unequal distribution of information and helping communities move towards greater self-reliance and self determination.

The arguments promoting the role of public libraries would, however, have validity if they were already providing, or at least capable of providing, the types of information services that seem to be needed. For a number of fundamental reasons I believe they are not.

Firstly public libraries are almost entirely based on printed materials. The majority of public librarians are involved in acquiring, organising and lending books. Even those running reference and information services rely almost entirely on the supply of printed materials. As we have already seen, printed materials are frequently unreadable, written in the languages of the ruling elite and do not relate to the needs of ordinary people. So, as research has shown, when people need information a public library is considered at best irrelevant(7,9) and at worst an unreliable source of information. Research in the United States showed that a half of all users

> ...believed that libraries provide inaccurate outdated, and irrelevant answers to their questions(9).

Public libraries are still seen as organisations that primarily exist to service reading needs. Indeed that is the way most of them function. Yet it is through oral means that people choose to solve their problems.

Secondly the prime skill which librarians possess is that of organising and retrieving information. Most of us were trained to believe that to be a good librarian it is not necessary to know anything about a subject to retrieve information about it. The training of librarians includes very little about communicating information, about reprocessing and repackaging it in a variety of formats - visual and oral as well as using the written word - so that it is appropriate to the people who need it. Yet, as we have seen, as societies become more complex it is essential to know a great deal to be able to retrieve the relevant information. Similarly information is rarely available in a form that is suitable to the needs of, say, a peasant farmer in Botswana or an unemployed Jamaican living in Britain.

Finally public libraries, like the rest of the machinery of government, are usually planned and managed by people who are geographically and educationally remote from local communities. Generally speaking public libraries are imposed, however well meaningly, on communities, and their role is seen as being a neutral one. This means that, like it or not, public librarians are a part of the ruling elite. They are not, therefore, ideally placed to help people resolve their difficulties with other parts of the government machine.

This may seem like a harsh criticism of public libraries. It is not argued that public libraries are irrelevant, merely that the needs which they were set up to meet are quite different from community information needs. So, libraries provide a very valuable service supporting the purposive reader, literacy programmes and those for whom the passive supply of printed materials is an appropriate source of information.

As such they will, however, have a far higher priority in countries where literacy and reading are commonplace, than in countries where they are not(31,32,33,34,35). This has

led a number of people to question whether a European or American style public library service is really what is needed in developing countries(20,21,31,33,35). Mchombu writes

> Looking at the experience of Tanzania, it is evident that an attitude of open-mindedness and objectivity has been largely absent. This has led to theories borrowed from abroad being applied misguidedly in a very different context with very detrimental results... This attitude betrays a failure to realise that existing libraries in developed countries have undergone an evolutionary process of growth, and that their present state reflects this evolution and the existing material base of that particular society(31).

In other words, the public library model of developed countries is inappropriate to meeting the daily information needs of ordinary citizens in a developing country. I would agree with this point of view wholeheartedly. I would, however, go one stage further. I believe the model is also inappropriate to meeting the daily information needs of ordinary citizens in a developed country.

The problem is, as I see it, the tendency of librarians to "think in boxes". If a need exists then it must be possible to meet it from existing institutions. In this case the public library. Instead, I believe, the real challenge for librarians lies in analysing and understanding the need that exists and evolving a new organisation that is designed specifically to meet that need. After all, when, for example, the need for public libraries was perceived in Britain the existing libraries in academic institutions did not expand to take on this role. A new organisation was created.

Community information services

What kind of services are needed? The following points are based on research which looked at needs and evolved from these, models for services which would meet them(9,31,32,36,37,38). More importantly they are based on action research where users were involved in setting up and evolving community information services to meet their own needs(13,22,38,39). Finally they are based on my own practical involvement with the development and day-to-day running of community information services over a period of ten years.

Firstly community information services cannot be based on the passive provision of printed information to users. For a number of reasons

- appropriate literature rarely exists
- the majority of potential users are not accustomed to using printed literature, and may, indeed, be illiterate in the language in which it is written.
- people and communities require more than just passive information to improve the quality of their lives either directly by solving an immediate problem or in the longer term by influencing the decisions which will affect their lives.

Secondly the information workers cannot be passive channels for information. This means that they must

- understand the information that they are handling. They will need a detailed subject knowledge in the areas in which they are working, and, also, where applicable, practical experience. This does not mean that they must all be graduates, simply that they can discuss their subject with confidence and authority.

- where appropriate information sources do not exist they should be able to create them, with the help of the local community where it is appropriate.

- they must also be able and willing to interpret, repackage and apply information to the users' situation. This implies a recognition that the printed word, whilst it is the most efficient means of recording information, is not always the most efficient way of communicating it.

- finally the information workers must, where, necessary help individuals and groups to act on the information that has been supplied. This implies workers who are fully accepted as part of the community they serve.

Equally important, community information services should be firmly rooted in and responsive to the needs of the communities they serve. This means that they cannot be imposed on a community and that ideally they should have advisory committees made up of potential and actual users. Similarly the information workers should work closely with and through the established channels for communication within the community, and also other professionals whose work involves the provision of information.

Finally, the community information service should be two-way. That is, it should act as a channel for information from, as well as to, the local community. It is insufficient to set up a service which provides a local community with information on government programmes and policies or practical information on matters such as farming techniques. Local communities should also be able to feed back information on how those policies work at the local level, on areas of need not being met by existing policies or on how easily and successfully the practical information can be applied.

What is needed is a network of local resource centres, staffed by specialists who service particular local communities. These communities would be defined, not geographically but in terms of their information need, whether that be rural agricultural workers in Africa or urban trade unionists in Britain; consumer groups in countries like Malaysia or pressure groups in Sweden.

At the national or regional level there needs to be one major resource centre for each of the subject-based communities. In these centres the relevant information would be collected and repackaged into the most appropriate forms and formats. Gaps in the information would be identified and filled, if necessary by commissioning research studies. The centres would need to be staffed by people who have a subject knowledge as well as information skills. These specialist would provide training and consultancy services to staff in the local centres.

To disseminate the information locally calls for information workers who have credibility and standing within the village or community and who can interpret and supply information to people who may not be functionally literate.

For too long libraries and librarians have hidden behind a cloak of impartiality and neutrality. No information is neutral. If the opportunities to use information to help disadvantaged individuals and communities are to be realised, librarians must recognise that they will become actively involved with interpreting and using information with local people. The work will be challenging, exciting and it will even, on occasions, carry risks. But it will never be neutral.

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1985
IFLA GENERAL CONFERENCE, CHICAGO
Division: Education and Research
Section: Library and Research

63-THEOR-2-E

Relationships between Practice, Education and Research in the Library/Information Sphere

by

Marjatta OKKO

Professor and Head of Department
Department of Library and Information Science
University of Tampere
Tampere, Finland

KEYWORD(S):
Research, role of in librarianship

For internal use only:
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RELATIONSHIPS BETWEEN PRACTICE, EDUCATION AND RESEARCH IN THE LIBRARY/INFORMATION SPHERE

by
Marjatta Okko

Introduction

A number of IFLA's sections have included research projects in their medium term plans. Why, then, is there a section devoted to research but with few contacts to those projects or other research projects inside or outside IFLA? I refer to the Section on Library Theory and Research. By spelling out the section's full name I have answered the question at least in part. Theory and research go hand in hand: Scientific research springs from theoretical considerations, theory is developed through research.

The point of departure chosen for this paper originated in my work as chairperson of the Standing Committee of the Section on Library Theory and Research in 1981-1985 and in the subsequent membership in the Co-ordinating Board of the Division of Education and Research. The Standing Committee has discussed the Section's terms of reference and found out that it cannot be a body that conducts research nor a body that co-ordinates research. Its work must be about theory and research, and, consequently, its main task is to promote library/information science as a discipline.

In an IFLA framework, a paper on relationships between practice, education and research would mean considerations of the scope of the Division of Education and Research in its relation to that of all other Divisions. The purpose of this paper is, however, to elucidate these relationships on a fairly general level. The library/information sphere mentioned

in the title is understood to be roughly analogous with the subject matter contained in the General Information Programme of Unesco.

General remarks

Library, archives, documentation and information activities - LAD in the Unesco sense - are forms of social and scientific communication. Characteristic of them is the custody of documents and clearing-house functions related to them. Hence, these activities are carried out in an institutional framework.

As elements of communication LAD activities are no isolated islands, i.e., they are not ends in themselves. They are for use. Man's basic communication needs do not change; his modes of communication do change. These changes are brought about not only through the technological developments in the production and dissemination of documents and information but especially through social and cultural changes related to the use of documentary information.

Fig. 1 is a presentation of the interdependence of LAD activities, use of documents and information, and education and research. Each is rooted in other social and cultural traditions: LAD in the society's needs to produce and disseminate information and documents as well as in the social and cultural background of use; education in the general resources and systems of disseminating knowledge and information for learning; research in the society's needs to know and in its ways to further intellectual development. Education, of course, produces both users and LAD personnel. Use appears as individual action but the user's motivation has also, in addition to the individual psychological plane, a social and societal background (Fig. 1 on p. 8).

The practice, education and research in the library/information sphere can and should be understood as a totality. Each represent different ways in which that sphere may be observed, considered, and presented. The denominator common to all three is the aim to advance that part of communication which is channeled through LAD institutions.

Practice, education and research form a continuity of action and reflection. They can also be understood as different aspects or phases in a dynamic totality.

Method of study

A phasic three-component totality lends itself easily for presentation as a triangle. A triangular diagram allows plotting compositions in terms of the relative amounts of the three components. Each apex represents a pure component and at the opposite side of the triangle the component is at zero, i.e., only the two other components are present in the composition. The perpendicular distances of a point from each of the three sides in an equilateral triangle represents the relative amounts of the three components represented by the apexes opposite to those sides (Fig.2A).

A triangular diagram can also be used to elucidate the interrelations of aspects in a three-aspect totality or of phases in a three-phase totality. An apex represents absolute dominance of a phase; along the opposite side of the triangle the phase has no impact at all within the totality. Correspondingly, the totality can be divided into three domains (Fig. 2B). Each domain is dominated by the phase represented by the apex but it contains varying amounts of the two other phases. This presentation is useful when considering the interfaces between phases. When divided into pairs of domains (Fig. 2C) the mutual relations of two phases are emphasized. (Fig. 2 on p. 9).

The discussion to follow is based on the use of triangular phase diagrams. Instead of proportions per cent, the concept of relative amounts was applied.

Interdependence of LAD activities

Let us first analyse library, archives, documentation and information activities as phases of the totality represented by the General Information Programme (Fig. 3A). The totality is here understood to consist of three phases, namely library (L), archives (A) and documentation and information (DI) activities. The phases have their counterparts in IFLA, ICA and FID on the level of non-governmental organizations co-operating with Unesco. Viewed as pairs of domains (Fig. 3A) L and A represent custody of documents and services based on them as opposed to handling of information. L and DI represent bibliographic aspects as opposed to handling of unique records, and, A and DI records management aspects as opposed to handling of published materials. The degree of data handling aspects increase toward the DI apex. A list of accessions can be considered to represent a very low degree of DI activity, close to the L-A side of the triangle. The production of publicly available non-bibliographic data bases approaches the DI apex even if the data base itself forms a document.

In the DI domain the activities focus on the availability of secondary information whereas access to documents is in the fore in the L and A domains (Fig. 3B). Grey literature is the common concern of both L and A and it belongs to the transition zone between published and archival materials.

The broken lines marked in Fig. 3B enclose a common core area for all three domains. The common core was discussed last year at the Unesco-sponsored International symposium on harmonization of education and training programmes in information science, librarianship and archival studies (PGI/E.T./HARM. II/8). Management, application of technology and user studies were identified crucial to the common core.

The presentations in Figs. 3A and 3B include facilities, tools, materials and action, hence also people who run the activities and people who use the services. The next step is to study the professional work.

Interrelations between LAD, education and research in library/ information science

When LAD is understood as production of professional work in a specific area of communication and as a research object, it becomes a phase in a totality composed of LAD work, research (R) and education (E) both for LAD work and research.

The LAD work domain contains a spectrum of tasks ranging from services to management and development of LAD institutions (Fig. 4A). The domain of research includes basic and applied research as activity. The domain of education consists of a spectrum from task-oriented "how-to-do-it-properly" training to academic education of a theoretical, research-oriented character. On-the-job training is understood to belong to the LAD domain (Fig. 4 on p. 10).

Viewed as a pair of domains (Fig. 4B) E and LAD appear to combine in a very practical and pragmatic manner as opposed to research that keeps questioning the relevance of what is being done. The LAD institutions acquire within this partial domain personnel primarily interested in service contacts with the patrons. The institutions - and the users! - certainly need service-oriented personnel. The problem is that training programmes are notorious for their unability to inspire students to learn managerial approaches, too (e.g., R. Bruyns, IFLA Conference in Nairobi 1984/ 15-TRAIN-2-E).

The R - LAD pair of domains represents a research and development (R&D) approach. Monitoring traditional LAD data provides managers with numerical, non-qualitative data on work done and services delivered. In order to understand phenomena

behind the monitored data more sophisticated approaches must be used. Surveys provide maps for the analysis of changes taking place. Evaluation studies give information on how well a service works from a given point of view. Even if LAD skills are required to identify problem areas, research skills are called for when deciding about research strategies, methods to be used and points of view to be applied. At the interface between R and LAD the two types of skills meet in R&D. The decisions to be made on possible changes within the LAD domain rest in it.

Development of models for transfer of information falls clearly on the R side of the interface between R and LAD. Methodology represents the pure R component in the diagram.

The paired domain E and R can be expressed in terms of recent IFLA seminars organized by the Division of Education and Research, namely "Education for Research - Research for Education". It goes without saying that this education contains a number of elements present in what was called training programmes when discussing the pair E and LAD. The difference lies in approach. In the E - R field these elements are considered in an analytical way and viewed against broader contexts, not customary in a "this-is-how-it-is-done" approach.

The totality shown in the LAD - E - R diagram of Fig. 4B resolves itself into three phases of orientation, namely service orientation, research and development orientation and discipline orientation (Fig. 5A). Theoretically, the results achieved in discipline-oriented work should bring about new and fertile ideas to be tested and developed within the LAD domain (Fig. 5A). Simultaneously the E domain should also provide the LAD institutions with the less ambitious manpower they need (thin arrow). A parallel concept of less ambitious research is questionable. LAD workers should realise that they cannot obtain from research the results they need without the effort

of assimilating the information through reading.

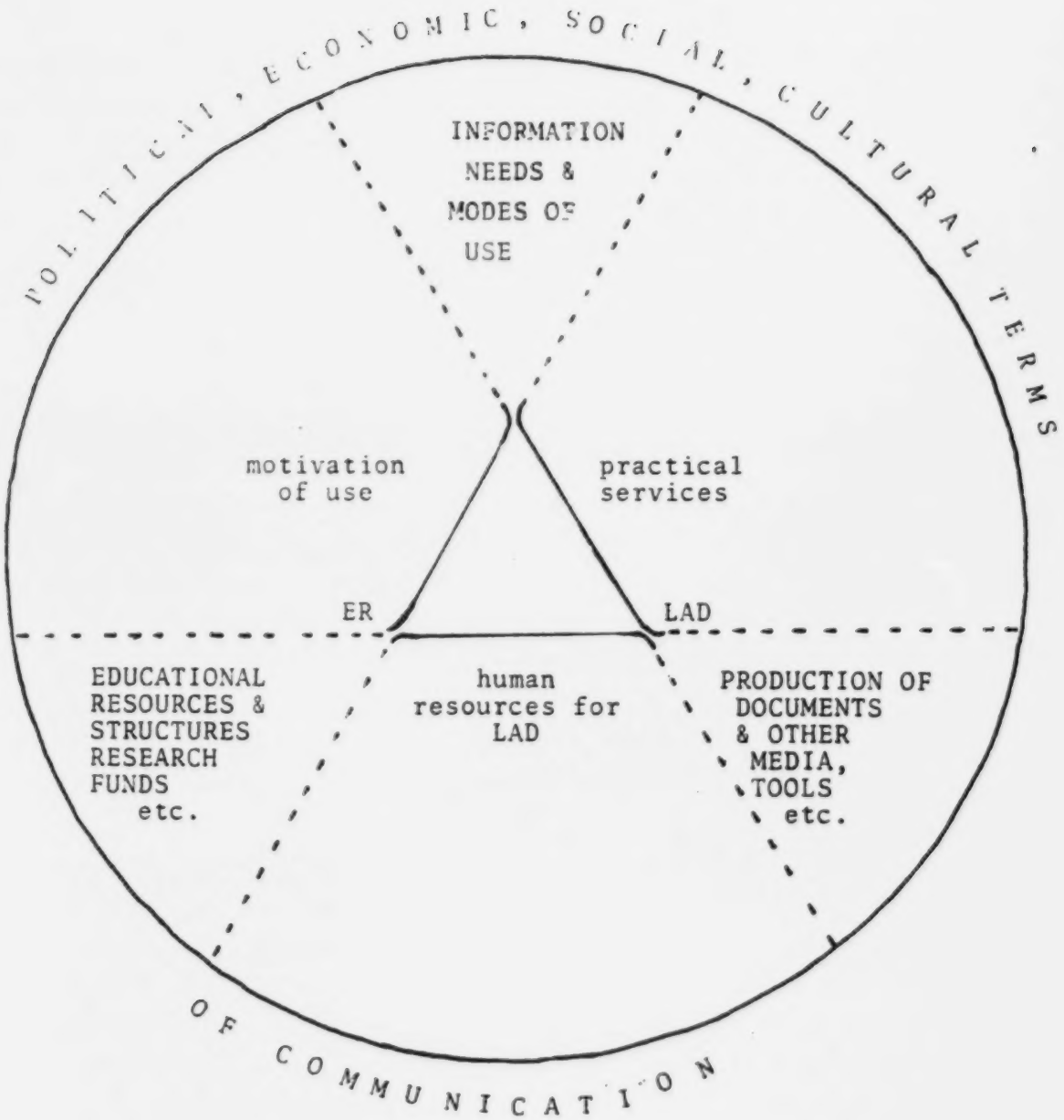
Concluding remarks

There exists and has existed since the beginnings of writing libraries and archives as well as library and archives practice developed by their custodians. At all times people entering library or archives work have had to learn how this practice functions. Someone in the library has taken over the role of educator and taught the essentials of the craft to the novices. From Gabriel Naudé on some librarians have distributed their teachings in written form to reach a broader readership than the apprentices in their own library. Göttingen in 1886, Germany, marks the beginning institutionalization of library education.

Scholarly librarians have explored the history of their collection and their libraries. The development of classification systems similarly represents scholarly work with ties to philosophy and deliberations on social and scientific communication. The history of librarianship can boast of leading scholars such as Alcuin of York, Tommaso Parentucelli (Pope Nicolaus V), Leibnitz in Göttingen, Lessing in Wolfenbüttel, Delisle in Bibliothéque Nationale, Ehrle in the Vatican, Nadeshda Krupskaya in the Soviet Union, to mention a few. There have always been personalities willing to expand their professional knowledge to creative thinking and action.

Today the pace societal change is so rapid and the changes in communication patterns so complex that the library/information sector must be prepared to react rapidly and creatively if it is to survive in the so-called information society. As I see it, it is not possible to cope with these problems by instrumental know-how knowledge. Use should be made of creative action based on research and scientific thinking.

We can, of course, wait for the Great Librarian of Our Day to reveal himself or herself. I believe, however, that the profession will be better off if library schools increase efforts to offer discipline-oriented programmes as options to more instrumental, task-oriented training programmes.



U = Use E = Education R = Research

LAD = Library/Archives/Documentation/Information activities in the sense of the General Information Programme

FIGURE 1

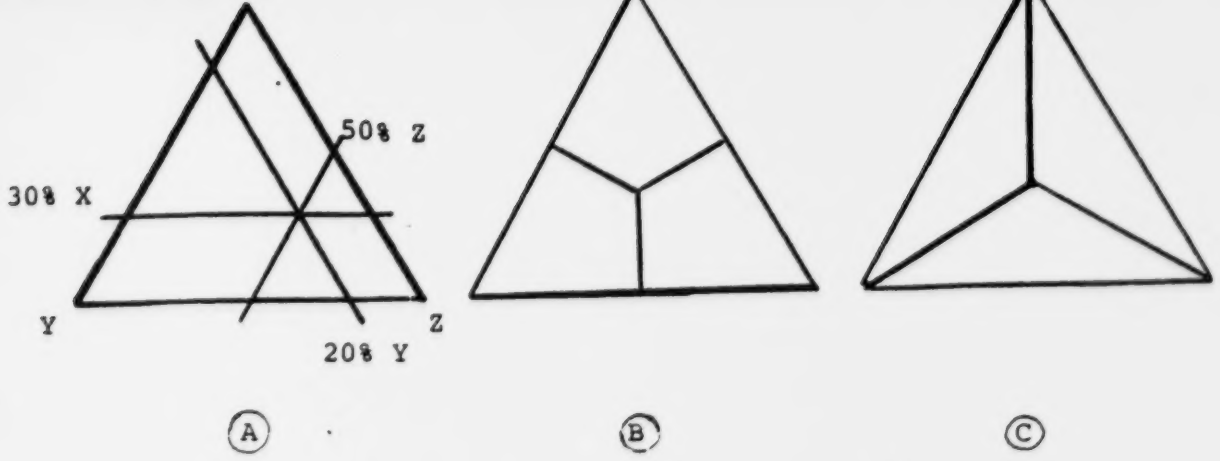


FIGURE 2

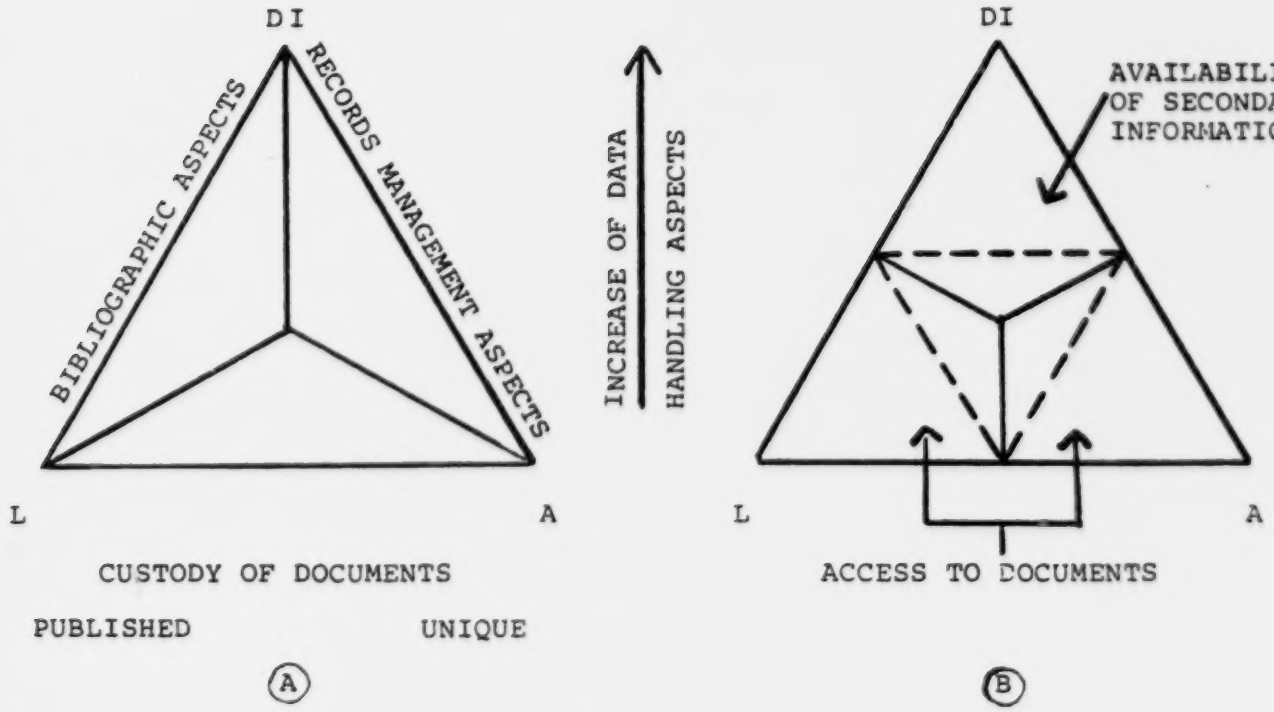


FIGURE 3

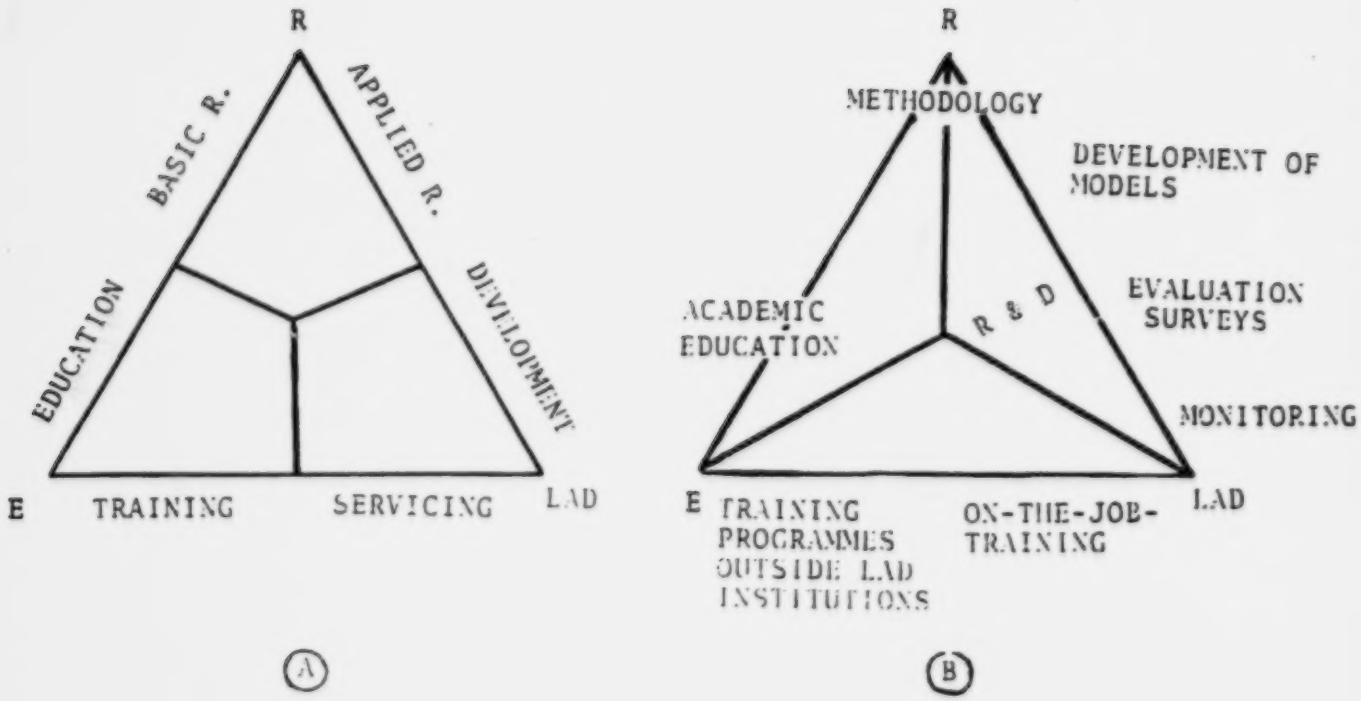


FIGURE 4

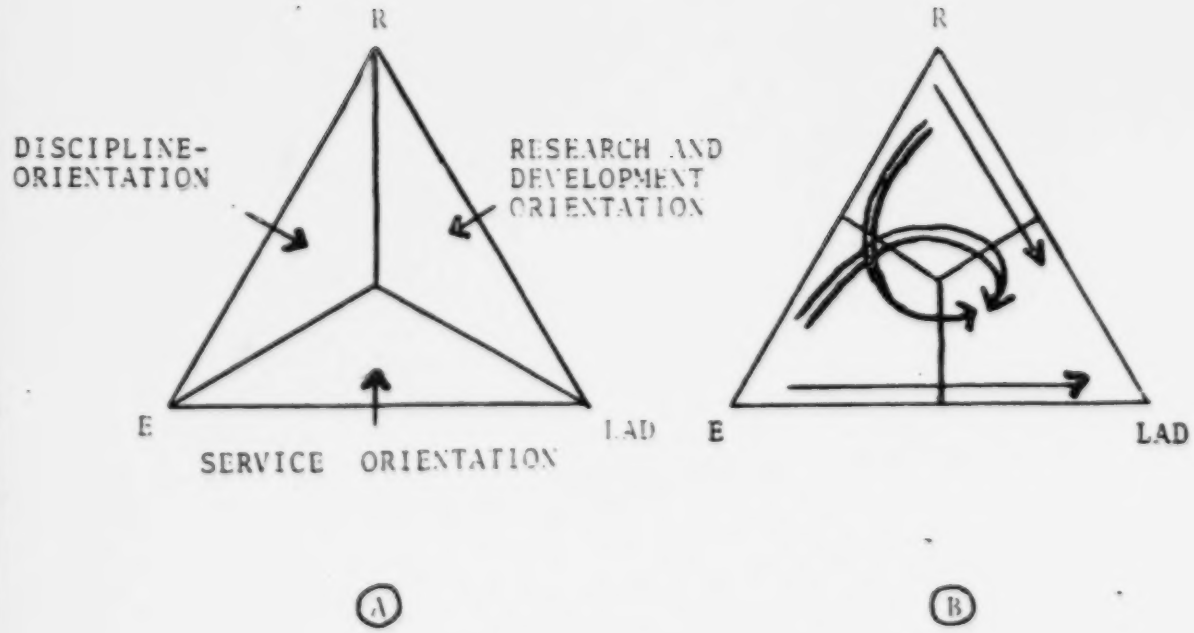


FIGURE 5

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THE LAW OF BRADFORD

by

Leo EGGHE

L.U.C., Universitaire Campus, B-3610 Diepenbeek, Belgium

KEYWORD(S):

Lotka, Bradford, Leimkuhler, Groos droop

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Division :

Section :

THE LAW OF BRADFORD

by

Leo EGGHE

L.U.C.*, Universitaire Campus, B-3610 Diepenbeek, Belgium
U.I.A., Universiteitsplein 1, B-2610 Wilrijk, Belgium

(*) Permanent address.

Keywords :
Lotka
Bradford
Leimkuhler
Groos droop

I. Introduction

We repeat the formulations of the classical laws of Bradford, Leimkuhler and Lotka.

The law of Bradford (see e.g.[8])

The classical law of Bradford says that, if we fix a certain subject and if we order the journals according to the number of articles on this subject, there exists a core of the first r_o journals, producing $R(r_o)$ articles on this subject such that to obtain $iR(r_o)$ $(i=2,3,\ldots)$ articles on this subject, one has to take the first

$$r_o + kr_o + k^2 r_o + \ldots + k^{i-1} r_o$$

journals. In other words, the group of journals who publish articles on the subject can be divided into groups (following the above mentioned order) containing

$$r_o,\ kr_o,\ k^2 r_o,\ \ldots,\ k^{i-1} r_o,\ \ldots$$

journals, each group producing the same number $R(r_o)$ articles on the subject.

The law of Leimkuhler

Another version of Bradford's law was formulated by Leimkuhler [15] (see also [19]) as follows :

$$R(r) = a \log (1 + br)$$

where a and b are constants, r is the rank of the journal (in the above mentioned order) and R(r) is the cumulative number of articles in the journals of rank lower than or equal to r.

It is proved in [4] and [11] that both laws of Leimkuhler and of Bradford are formally (i.e. mathematically) equivalent.

The law of Lotka

This law states that (see e.g. [17])

$$f(y)=\frac{A}{y^{\alpha}}$$

where f(y) is the number of authors producing y articles and where A and α are constants. We formulated here the

original version of the law but, of course, this law can also be formulated replacing "authors" by "journals". In this setting this law is equivalent with the above mentioned laws, only for $\alpha = 2$ (see |11|). This fact and the fact that one often encounters cases where $\alpha \neq 2$ will be used in generalizing Bradford's law. This will explain then the so called Groos droop (see |13|). This theory is described in section III.

In section II the equivalent laws of Bradford and of Lotka (with $\alpha = 2$) will be used. The mixture of these two laws gives some unexpected results. It may be noted that Bradford's formulation is a rank approach while Lotka's formulation is a frequency approach. In section II we adopt a frequency study within a rank study in order to investigate the value of the parameter m_p below : Consider the classical Bradford groups. Each group is numbered, starting with the last group : i.e. the group containing the least productive journals. m_p then denotes the number of relevant articles in the most productive journal in the p^{th} group. We show that

$$m_p = \frac{k^p}{e^E} \qquad (p = 1,2,3,\ldots)$$

where k is the Bradford multiplicator and E = 0,5772..., the number of Euler. From this a practical formula for estimating k in terms of the known value y_m, the number of relevant articles in the most productive journal (i.e. the journal of rank 1) is derived and tested in practical examples. It is shown that our value of k is close to the experimentally verified formula

$$k = \frac{6}{\pi^2} \log y_m$$

of Yablonsky (see |22|)

II. The "dual" of Bradford's law.

When having a table at our disposition of data as described in Bradford's law (f.i. journals ranked according to their number of articles on a certain fixed subject), it is not immediately clear how to form the Bradford groups. What is the "core" number r_o of journals ? how large is then the number of articles y_o in each group (the same for each group if the data conform with Bradford's law !).

In |22| (see also |11|) one finds the following formulas

$$r_o = (k-1)y_m \tag{1}$$

$$y_o = n_1 \log k \tag{2}$$

where y_m is the number of articles in the journal of rank 1, and n_1 is the number of journals with one article (the number of least productive journals). k itself is found through the formula

$$k = \frac{6}{\pi^2} \log y_m \tag{3}$$

(3) can then be used in (1) and (2). Then all the Bradford groups can be constructed. There is however the following problem : formula (3) in |22| originates from an empirical conclusion in |12| for which there is no mathematical evidence. So I started investigating a mathematically proved formula for k; only in this way we can be sure to have a good formula for Bradford data.

This value of k is found indirectly by first studying the parameter m_p : if we number the Bradford groups, starting with the last group (containing the least productive journals), then m_p denotes the number of articles in the most productive journal in the p^{th} group.

How can this be done? To give a simple example we shall outline the methods in investigating groups 1 and 2 (i.e. the last two groups in the Bradford setting). To have in the last group (group 1) only journals with a productivity of one article on the subject is expressed by the condition

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$$y_o \leq n_1$$

Using (2) one sees that this can only happen for log $k \leq 1$, hence for $k \leq e$

Let us hold on this condition and think of what can happen in group 2 in this situation. Now group 2 cannot only consist of journals with a productivity of one article since this would imply that both last groups contain the same number of journals (since they contain the same number of articles and every journal in these groups has only one relevant article), contradicting Bradford's law. So group 2 must always contain journals with 2 relevant articles. Can there be journals with 3 relevant articles in group 2 ? For this we have the condition

$$y_o = n_1 - n_1 \log k + \frac{n_1}{2^2}.2 + \frac{n_1}{3^2}.3.x \qquad (4)$$

with $x>0$.

This can be seen as follows : n_1 is the number of journals with one relevant article ; $y_o = n_1 \log k$ of them are in group 1. So $n_1 - n_1 \log k$ are in group 2. According to Lotka's law,

$$\frac{n_1}{2^2}$$

is the number of journals with 2 relevant articles. These journals yield

$$\frac{n_1}{2^2}.\ 2 = \frac{n_1}{2}$$

relevant aticles. But we investigate here the case that also journals with 3 relevant articles are in group 2. So, all articles coming from journals with 2 relevant articles are included : $\frac{n_1}{2}$, and then some ($x > o$) journals with 3 relevant articles : they total a number of journals (Lotka) :

$$\frac{n_1}{3^2},$$

hence a number of articles

$$\frac{n_1}{3^2}.3 = \frac{n_1}{3}$$

This explains (4). The condition $x>0$ yields using (4) and (2)

$$\log k > \frac{3}{4}$$

or $k > 2{,}117.$

This illustrates how we can describe group 2, knowing the content of group 1. For instance we can show that, in case group 1 contains only journals with one relevant article, group 2 cannot contain journals with 5 relevant articles. Indeed, the previous argument (modified a little bit) shows that for this to happen log k must be strictly larger than 1, contradicting $\log k < 1$ ($k < e$), the condition for having only journals with one relevant article in the last group. This should illustrate the methods of investigation.

This is now continued and generalized. From this study, also a formula is derived for m_p : the number of relevant articles in the most productive journal in group p. We find

$$m_p \approx \frac{k^p}{e^E} \qquad (5)$$

(E = 0,5772..., the number of Euler). This approximation is already good from group 2 or 3 on. This power function in p is hence also a Bradford law, but now we start at the other end of the table : with the least productive journals. For this reason I called this property the dual of Bradford's law.

This result does not only have theoretical interest. We can give here a practical application of (5). Indeed, there is only one m_p which follows immediately from a practical table: m_p of the last group (containing the core journals) : let there be a groups. Then

$$m_a = y_m$$

the number of articles in the most productive journal : this number is of course known. This yields :

$$y_m = \frac{k^a}{e^E}$$

$$k = (e^E y_m)^{\frac{1}{a}} \qquad (6)$$

This formula is very good as will be seen further on. Since we said that $m_p \approx \frac{k^p}{e^E}$ except for p = 1 (and sometimes for p = 2), there is a deviation from the "best" value for k, when y_m is low. But for $y_m > 70$ we have already a good formula. For low values of y_m, one can use the formula

$$k = y_m \frac{6\, e^E}{a\, \alpha^2} \qquad (7)$$

Its derivation is not of interest here. Let us compare formulas (6) and (7) with formula (3) of Yablonsky, for a = 5 (five groups)

y_m	$(e^E\, y_m)^{1/5}$	$\frac{6}{\pi^2} \log y_m$	$\frac{6\, e^E}{y_m\, 5\, \pi^2}$
30	2,21	2,07	2,09
40	2,35	2,24	2,23
50	2,45	2,38	2,34
70	2,62	2,58	2,52
90	2,76	2,74	2,66
110	2,87	2,86	2,77
130	2,97	2,96	2,88
200	3,24	3,22	3,16
300	3,51	3,47	3,45
400	3,72	3,64	3,67
500	3,89	3,78	3,85
1000	4,47	4,20	4,48
2000	5,13	4,62	5,21

The ressemblance of the three columns is apparent. Hence we have established a theoretical foundation of the value of the Bradford multiplicator k, based on our formula for m_p.

So we see that theoretical reasonings (and they are very theoretical indeed, concerning the establishment of the formula for m_p) yield very good practical results : from a table in practise, we can immediately calculate k, and from k also r_o and y_o, using formulas (1) and (2).

III. Deviations from Bradford's law

We mentioned already that Bradford's law is equivalent with Leimkuhler's :

$$R(r) = a \log (1 + br) \qquad (1)$$

where r is the rank of the journal, and R(r) is the cumulative number of relevant articles in the journals of rank 1,2,...,r. The function R(r) looks graphically (in a semilogaritmic scale) as in fig. 1.

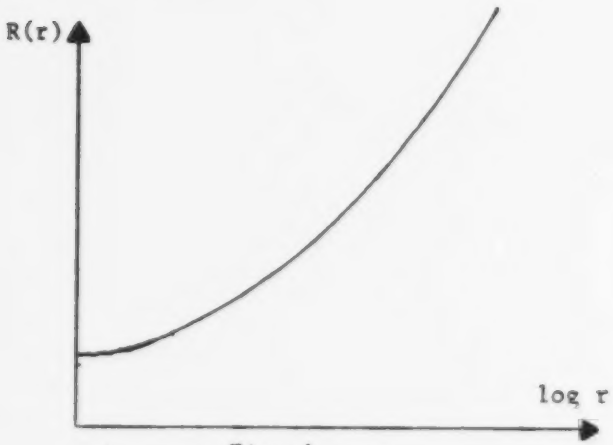

Fig. 1

For most values of r one can check in practise that the curve of fig. 1 fits very well the experimental data. However one finds often a deviation for higher values of r. One indeed often encounters the so-called "Groos droop", since Groos was the first to write about this deviation (see |13|). See fig. 2 for a graphical illustration of this deviation.

Since Groos' paper there have been a number of investigations on this matter : see the papers |1|, |2|, |3|, |6|, |7|, |9|, |14|, |18|, where also examples of this fenomenon are given.

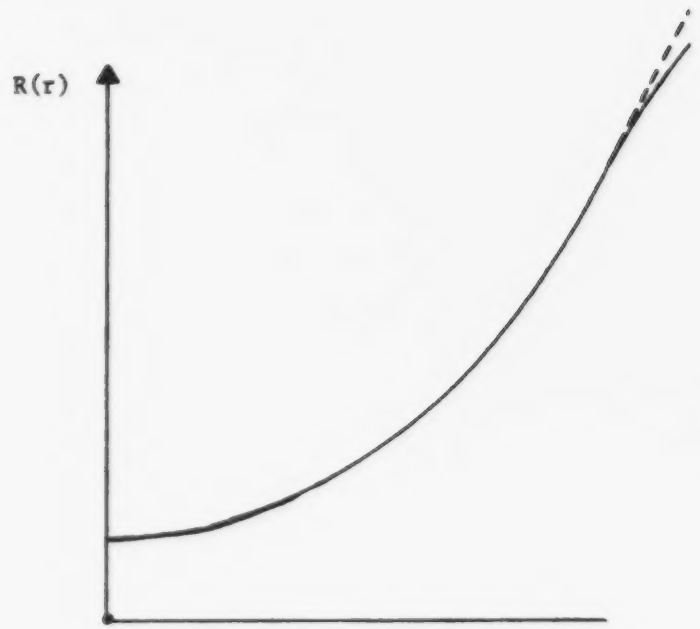

fig. 2

In search for a simple explanation of this fact, we can notice that Leimkuhler's law is only equivalent with Lotka's law.

$$f(y) = \frac{A}{y^{\alpha}} = \left(\frac{y_m}{y}\right)^{\alpha} \qquad (2)$$

for $\alpha = 2$. What happens if $\alpha \neq 2$? We also remark that Bookstein explained theoretically the possibility of the above law for $\alpha \neq 2$. On the other side practical examples in |2| show values of α ranging from 0,66 to 1,81. This is motivation enough to investigate the influence of law (2) on R(r) in Leimkuhler's version.

Indeed, suppose $\alpha > 2$ then

$$\left(\frac{y_m}{y}\right)^{\alpha}$$

increases much more quickly (for decreasing y) than $\left(\frac{y_m}{y}\right)^2$ does. The opposite is true for $\alpha < 2$. So, in forming Bradford groups, in the former case the ranks are increasing much slower than in the case $\alpha = 2$ and in the latter case just the opposite is happening. From this reasoning, two curves

may be expected : see fig. 3 :

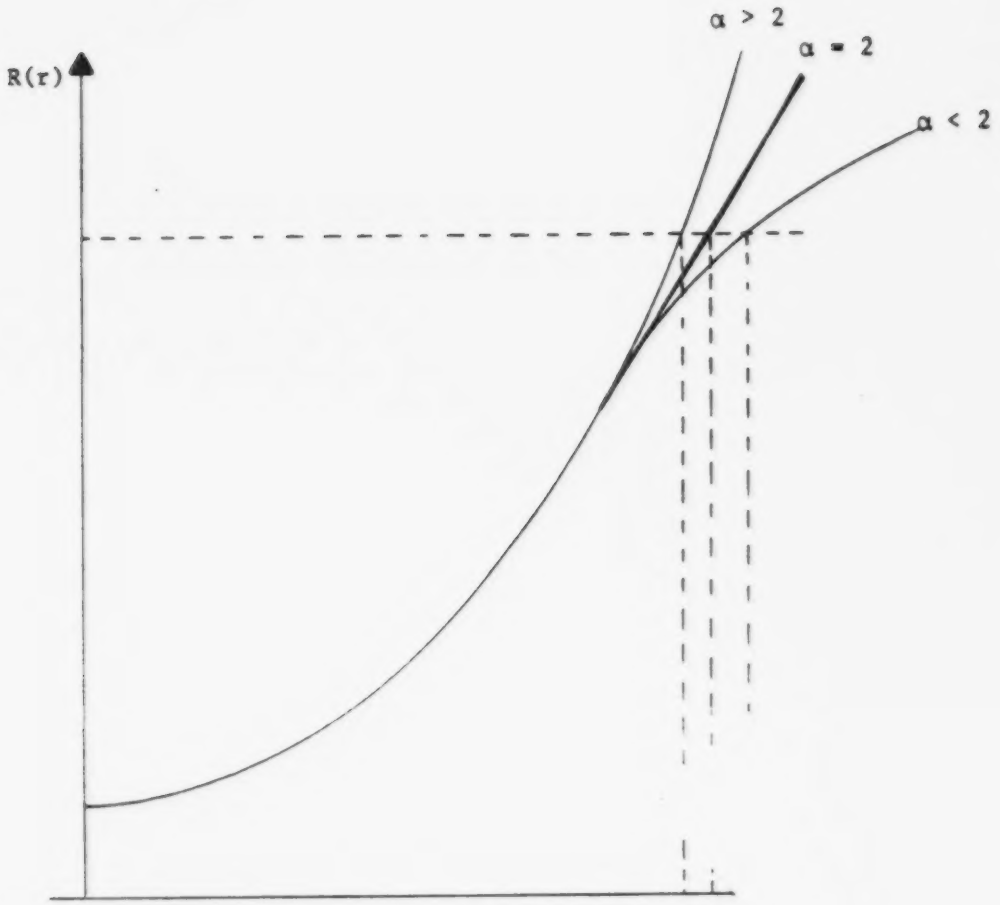

Fig. 3

So it is our goal, based on the idea developed above to find an analytical expression for R(r) that conforms with the curves in fig. 3. We mentioned already applications of the Groos droop ($\alpha < 2$); however the case $\alpha > 2$ is f.i. encountered in |16|. We shall return to this example later on.

Based on this principle of "retarding" or "speeding up" the ranks (in comparison to $r = r_o + r_o k + \ldots + r_o k^{i-1}$ in the classical Bradford law), we come, after some mathematical work to the generalized Leimkuhler law

$$R(r) = a \log (b+cr+d \log (1+cr)) \qquad (3)$$

So, for $d = 0$ we refind the classical Leimkuhler law.

By calculating $\frac{d\ R(r)}{d \log r} = R'(r)$ and $R''(r)$ we find two possible forms of the curve in equation (3). We find the form with $\alpha > 2$ in fig 3. when $d < b$ and the form with $\alpha < 2$ when $d > b$, exactly as we wished. So we found a theoretical explication, not only of the Groos droop but also of the opposite effect. That this effect also occurs sometimes is seen in the next example.

Example

In |16| we encounter both deviations as we described above. In trying to form classical Bradford groups in two subjects (applied geophysics and lubrication), they find that in the first case the value of the Bradford multiplicator decreases whilst in the second case it increases.

According to what we have said this gives us the information that in the first case α must be > 2 whilst in the second case α must be < 2. According to our theory, for r large, we expect to find in the first case the experimental curve of $R(r)$ to be above the classical Leimkuhler curve and in the second case, the experimental curve of $R(r)$ to be below the classical Leimkuhler curve. This is the case, as is seen in |16|, p. 215, 216. So we encountered here an example of a situation where $\alpha > 2$. So not only the explanation of the "Groos droop" seems to be valuable !

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IFLA GENERAL CONFERENCE, CHICAGO, 1985

DIVISION: *Education and Research*

SECTION: *Library Theory and Research*

Bg-THEOR-4-

MANAGEMENT AND THE CONDUCT OF IN-HOUSE LIBRARY RESEARCH

by

G G ALLEN
Principal Librarian
Western Australian Institute of Technology
Perth, Western Australia.

Keywords:

Management
Library Research
Staff Development

For internal use only:

To be brought to meeting no:

------ 126

Remarks:

to be presented orally ☐

for distribution only ☐

MANAGEMENT AND THE CONDUCT OF IN-HOUSE LIBRARY RESEARCH

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G G Allen
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The purpose of this paper is to discuss the relationships that should necessarily exist between the management of a library and any research activities that may take place within that library. By 'management' is meant that body of senior staff who are normally involved in the determination of policy and who carry the responsibility for the general direction of practice; typically, this group would comprise the chief and deputy librarians and the heads of major departments. By "in-house research" is meant all those investigational activities carried out by the library's own staff into activities, issues or problems occurring within the library or being directly related to the library's normal functions. Thus in-house research for the present purpose does not include studies commissioned from a consultant or carried out in the library by persons not employed by the library, nor would it include studies by members of the library staff of another library, or an activity outside the normal functions of the library as might be undertaken for a research degree thesis or out of general curiosity. Nevertheless what is left is a large enough area of opportunity, and indeed may well be the greater part of all library research that is taking place. A recent survey of some Australian libraries by Exon (in press) has revealed an extent of in-house research considerably greater than the totality of research being reported formally to the National Library of Australia which maintains a register of library research in progress.

In order to justify or explain why library management is or should be involved in in-house research activities, other than by personally conducting investigations, it may be helpful to consider why in-house research studies are or should be carried out at all. The most obvious reason for setting up a research investigation is that some

specific problem has been identified, or a question asked to which the answer is not known. Such studies are pragmatic and have a clear objective which, if achieved, is expected to resolve the issue.

An important reason for research activities should be planning, for a new development or physical facility, in support of regular budget submissions, or as the basis for a long-term development programme. Such research may range far and wide but it is likely to require at least some element of in-house investigation.

These first two reasons for in-house research relate to the operational needs of the library as an organisation. Another major reason may however be the personal needs of the staff, to improve their understanding and competence in their work, to enhance their formal qualifications, or even merely to satisfy their personal intellectual spirit of enquiry. For individual librarians the library in which they are working is often the only possible or convenient place in which to indulge their curiosity. But viewed in a broader context, research activity by individual librarians in their own libraries is an important, indeed essential, contribution to the general development of the profession of librarianship.

Coleman (1980), in a discussion of the research needs of public libraries, neatly summarises the attitude of the majority of practising librarians -

> "Librarians want research to be systematic, related to practice and to have a definite end product!"

Many also resent any interruption to their regular service functions which they regard as of overwhelming importance and for which they believe they already have too little time available. A defence often adopted against research activities is to deny that they are research at all, or that the results are unreliable because of the pressure under which the study was conducted, and therefore such projects are not written up for publication and perhaps not even reported at all. The function of management in a library where pragmatic problems are in fact resolved by a process of research,

should be to ensure that the conduct of the investigation is not so cursory that the defence of inadequacy can be relied upon, and that the results are appropriately reported. Indeed, management is failing in its own responsibility if identified problems are inadequately investigated, or if solutions based on inadequate investigations are allowed to be accepted into practice.

Formal planning for development is the normal responsibility of any management. It should be axiomatic that planning is based upon known facts, or that hypotheses, where these are necessary, will be tested for observation. No doubt there is considerable research in the literature, extensive examination of statistics etc in the planning activities of many if not all library managers. However, it must be admitted that the bases upon which librarians build complex submissions for resources or expansions of services all too often rely, in the ultimate analysis, on the subjective assessment of some predecessor or on the averaging of empirical data from a more or less arbitrary selection of other libraries.

This situation arises because of the lack of an adequate theoretical and research base for librarianship, a professional failing identified by a growing number of commentators. By way of illustration, the following quotation from John Christ (1972 p139) may be taken as typical:

> "As a profession and as a subject field, librarianship is sadly underdeveloped. If the full academic range of library science is to be clarified, librarians will have to engage in full-scale, massive research into the study of learning behaviour which occurs in libraries ... librarianship also needs a thorough analysis of the relationship between the librarian and users ..."

The necessary knowledge base required by library management for credible planning must depend upon studies conducted in individual libraries, and to this end managements have both a need and a responsibility to undertake, initiate and promulgate in-house research activity.

The third context for in-house research that was identified is the field of staff development. The issue of staff development has been receiving increasing attention throughout society, on the one hand as organisations recognise that their success depends upon the competence and continuing performance of the staff they employ, and on the other as individual employees recognise that their career advancement and the satisfactions they may obtain in their work situations will be at least strongly influenced by the extent to which they achieve personal developments in knowledge, skills and performance. The needs and the reality were the subject of a recent study by Margaret Trask (1983 p120), who writes of :

> "the necessity for libraries to accept a strong role in the development of staff to fulfil institutional philosophy, goals and procedures. In many libraries, there is no recognition of responsibility for staff development generally, sustained induction and training of new staff. Lack of this recognition can be detrimental not only to the individual staff member but to the quality of service delivered to the users of the library."

The field of staff development is complex and much broader than the issue of involvement in research. However, research has been widely recognised as a valid means of personal development. Thus from her extensive survey of professional librarians, Elizabeth Stone (1969, p215) reported that :

> "Respondents felt that for those librarians who did research, growth would follow automatically.....They also stressed making the results of research more visible....in the belief that this would....add stature to librarianship. The concensus was that promotion of research by the employing library and the library association would serve as a general stimulus for professionalism."

Whether such research is for an academic award, or whether it relates to a practical issue in a particular library, is not relevant to its

function as a vehicle for personal development. However, there is no reason why an in-house research project cannot be acknowledged by the library management as a staff development experience, nor is a practical, in-house project necessarily incompatible with work for a higher degree. The opportunity exists for management to establish staff development programmes that enable and encourage research, and to channel such activities into projects that not only develop the capabilities of the individuals involved, but also contribute directly to the understanding of the library's needs or to the improvement of its performance. Further, management can, and indeed should, negotiate with library schools for the recognition of appropriate in-house research in the academic context. Such collaboration will not only achieve the professional development of the individual but may do much to enhance the relevance of academic research, the application of academic research to practice, and the overall quality of in-house investigations.

This perception of research as staff development must place considerable responsibilities on the senior library management. It has been claimed that "the best staff development officer is the chief librarian, who has the authority to carry policies through" (Elliott 1983), but the requirement is for more than authority. As Stone (1969 p212) again reports "

> "The type of leader who could best stimulate.... professional development activities....should be approachable, openminded, sensitive, and as concerned about the individual's goals as the library's objectives and have the ability to relate personal goals to library goals."

Moreover, the respondents to her survey also "stressed the positive influence of the administrators who themsleves participated in continuing education activities."

The obligation for management to encourage research is anything but altruistic. As Professor Schneier of the University of Maryland said recently while on a visit to Australiaat the invitation of the

Australian Institute of Management, "What you get paid to do largely is to develop and improve the performance of the people who work for you." (Reward...1985). It is also worth noting the comment by Dr Lynton Hayes, Executive Director of AIM, when introducing Prof Schneier, that "We won't get the best out of people unless we learn to reward performance. Traditionally, we have rewarded tenure, loyalty, length of service, but when we reward performance, we will really see the difference." Therefore it may be concluded that management has a responsibility not only to encourage research in a staff development exercise, but to ensure that effective research performance is rewarded. If this is not achieved, then the gain from the intellectual development of the staff may be lost through the negative effects on subsequent performance and attitude that the absence of recognition may engender.

From the foregoing discussion, it is perhaps possible to begin to identify the particular functions and responsibilities of library managers in relation to in-house library research. These may conveniently be related to the stages through which a successful research project should normally progress. Ten such stages have been identified, which may then be grouped into three broader phases, before, during and after the research activity proper.

Before any in-house research can actually be undertaken there are a number of prerequesites that the management must or should ensure. The first of these will be termed *FACILITATION* which embraces the general climate in the library. Not only must the management have a positive policy in favour of a research approach to problems, planning and personal development, but it must make that policy known and understood among the staff. There must also be an unambiguous undertaking to support approved projects materially as well as in principle. Once an active programme of in-house research has become operational, these matters will be self-evident to the staff, but it cannot be assumed that professional staff will automatically or readily accept a suggestion to engage in a research project until they have confidence that management can and will provide the necessary support. There is indeed much evidence that many library managers take the view that in "difficult economic times", which

always means right now, resources cannot be spared for research. In reality any medium sized library, with between fifty and one hundred staff, can support a modest but meaningful research activity, if it is relevant to the library's functions and if the management is determined.

Nevertheless, even when the right climate exists for in-house research, there will be initially, and to some extent continually, a need for *MOTIVATION* of the staff who will have to carry out the research. The ability to motivate staff to do anything is a necessary ability for a manager, and different managers ma employ different techniques. These may include persuasion, by logical argument, promises of rewards or improved operating conditions, pressure through force of personality or through the linking of benefits, such as promotion, to success in research, and last but by no means least, there is the argument by example, the participation of management in research activities themselves. This last may be most effective where the senior member of staff joins a team of less senior staff to tackle a specific project. The process of motivation will remain necessary because enthusiasms tend to wax and wane with corporate or personal fortunes, while the turnover of staff will mean the fairly regular appearance of new recruits who must be conditioned to the climate of active library research.

The *DETERMINATION* of what research shall be carried out in-house must rest with the library management, if for no other reason than the inevitability that research will use up library resources. From the point of view of the staff this realit does relieve them of some of the responsibility for ill-conceived projects, or programmes that fail for reasons of inadequate support. Conversely the recognition of the responsibility that management necessarily carries confers on management the privilege to initiate research programmes with the expectation that the library staff will respond positively.

If the foregoing three stages comprise the "before" phase of a research project, the next stage of *SPECIFICATION* marks the gateway to action beyond which any turning back is an acknowledgement of failure. Once a research idea has been formulated and accepted, it

must be developed into a formal statement of the problem, the objectives of the research programme including any hypotheses, the methodology to be adopted, the time scale and resources estimated to be required etc. Management need not be involved in the actual drafting of a specification, but it should always be known that senior staff are available for consultation. Ultimately, the specification must be formally approved by management and such approval coupled with the allocation of resources amounts to the go ahead or *REALISATION* of the proposal.

If a member of the management is involved in the project it may be assumed that there is a sufficient control. However, it is important to both the individual researcher and to the library as a whole, that management maintains an interest in every project. This may be achieved by periodic *CONSULTATION* between the researcher and a designated member of the management, to confirm that the programme is on course or, if necessary, to revise schedules, marshall additional resources or, in the extreme, determine an early termination.

Hopefully, any well prepared project will reach the stage of *RESOLUTION* when data has been analysed and conclusions drawn. This should be the moment that management has been waiting for and it is appropriate that they receive early advice on the general result. At this point a decision has to be made about the formal presentation of the project. Is it an appropriate subject for *publication*, and if so in what form or in what organ? An inexperienced researcher may require assistance in preparing a report or paper, and if it is to be offered to a prestigious journal it may enhance the prospects of acceptance if the typescript is forwarded with an official covering letter. And it is the especial responsibility of management that the results of any valid in-house research are properly recorded in some form and so reported that they may be accessible to the profession at large. Until this condition is achieved, no genuine research project can be said to have been completed.

But for the library in which research takes place, and for the staff that have committed themselves to the successful prosecution of a project, it is critical that the implications of the findings be

acknowledged. Nothing can do more to destroy morale than the failure to acknowledge work honestly carried out. Therefore, if management has initiated, approved and resourced a research study, it must be prepared for *IMPLEMENTATION* of the findings. In some circumstances, such as where implementation would require resources that cannot be obtained, it may be possible to defer action, but at the very least, management must be prepared to acknowledge the implications of research it has itself approved, and to take the staff involved in the research into its confidence in the consideration of the practical consequences.

In a well managed and cohesive library, the relationship between management and staff may well be so secure that the acknowledgement of an investigation well done, and the willingness to have the findings made public, are sufficient *RECOGNITION*. Nevertheless, it is naive in this day and age to suppose that all and every professional librarian works for the greater glory of their employing library and has no thought for personal advancement in professional status or remuneration. Research, and in-house research in particular, should serve the pragmatic ends of the library, but these are not necessarily, and should not be, in conflict with the legitimate ambitions of the library staff. An objective of in-house research, for the individual librarian, must therefore be the reasonable possibility of some reward, not necessarily immediately, but in the not too distant future. Management has the power to confer some rewards on staff, and if it is positively encouraging or demanding research involvement, then it must also identify some benefits that will flow from successful compliance with such a policy.

The most obvious reward for performance is personal advancement - an increase in salary or a clear promotion to a superior position. Management may have some power to effect the former, and it may be assumed that it can write in research achievement as a positive factor in the criteria for promotion. However, there are other reward systems, and these should be explored in relation to research performance. Leave and travel support to attend professional conferences; assistance to enrol in courses of study for higher

qualifications; encouragement and support to seek external support for further research or to take on consultancies, are all rewards that may be very acceptable to some staff. Others may welcome the opportunity to accept greater responsibilities in their work situation, accepting the personal acknowledgement of their worth as sufficient recognition of the effort they have made to complete a successful research project.

In conclusion, it is submitted that in-house research is an activity that should be encouraged, even demanded, by library managements, because without it there can hardly be any objective assessment of services, performance or needs. It must also be seen as a significant element in the personal development of library staff, and in the continuing evolution of librarianship as a profession. The role of management in this sub-system of library operations is critical, for management controls, if it does not actually create, the conditions in which the staff operate. If it is accepted that libraries and librarianship need research, and if research in the real world of the working library is an essential part of that research, then library managements have a professional responsibility to foster in-house research. With that wider responsibility goes the authority to encourage and support the research adventures of their staff, and the further responsibility to manage those activities effectively, in the interests of the individual librarians, the libraries and the profession.

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IFLA 1985

IFLA GENERAL CONFERENCE, CHICAGO

Division:

Section: Library Theory & Research

183-THEOR-6-E

THE ROLE OF INFORMATION IN NATIONAL DEVELOPMENT PLANNING

BY
Brian J Perry
Director
British Library Research and Development Department

KEYWORD(S):

For internal use only:
To be brought to meeting no:
126

Remarks:
to be presented orally ☒
for distribution only ☐

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THE ROLE OF INFORMATION IN NATIONAL DEVELOPMENT PLANNING

B J PERRY

The title of the paper I was originally asked to present covered probably as wide a series of concepts as anyone could raise in the information world. It was, therefore, with some relief that I discovered the overall theme of today's session which is "The Role of Information in Library Research". This, fortunately, greatly restricts the coverage of this paper.

Since I have been given a very free hand in preparing the paper, I have decided mainly to cover our experiences within the United Kingdom and to draw some general lessons from these experiences that can be applied to other situations.

I would like to start by putting the library situation in the United Kingdom in context.

We are an information rich society. We probably have more publicly available library services than any comparable-sized developed country - 5,600 public library service points, and over 800 academic libraries. Our book publishers have an annual turnover of about 1,500 million American dollars, selling about 400 million books, of which 130 million are exported.

Last year, our book publishers introduced over 50,000 titles, of which about 10,000 were reprints or reissues. Other than the libraries I have already mentioned, there are about 2,000 specialised libraries in industry, commerce and government, and three national libraries - the British Library itself, and the National Libraries of Scotland and Wales. The libraries and information services combined employ about 43,000 staff, and their annual budget for staff and stock is in excess of 760 million US dollars. An interesting fact that is surprising to most observers is that in the UK wehave, compared with other population figures, more microcomputers and video-recorders than any other nation.

We are moving into the Information Age. In 1901, for instance, 15% of our workforce were engaged in the agricultural and extraction industries, 43% in the manufacturing industry and construction, and 34% in the service industries. The equivalent figures for 1981 were 3%, 32% and 65%, respectively.

Although we are still a small country in terms of production of computer databases for bibliographical or fact retrieval, a survey supported by my Department two years ago identified nearly 500 databases being produced in the United Kingdom, a large proportion of which were either available online or had plans for going online in the fairly near future. The largest online databases produced in the UK are of international importance, and together have over 6 million references. these are BLAISE (produced by the British Library), the INSPEC database, Derwent's database, and the online services produced by the Commonwealth Agricultural Bureau.

We really have no National Information Policy, though we do have policies at various levels on various aspects of LIS work and there are several bodies within the UK with policy responsibilities that touch on information and library matters.

First and foremost, there is the Office of Arts and Libraries under its present Minister, Lord Gowrie. This is a small Ministry that was relatively recently detached from its original parent body - the Department of Education and Science. Apart from his responsibilities for support of the Arts, the Minister is also responsible for administration of the Public Library Act of 1964 which gives him great powers to ensure the efficient provision of Public Library services in England, and he is also responsible for funding the British Library. His Office has responsibilities for taking on information matters that are not directly the responsibility of other major Government Departments, and it is additionally responsible for the Interdepartmental Co-ordinating Committee for Scientific and Technical Information (ICCSTI) which, amongst other functions, acts as one of the major channels for UK participation in the information activities of the European Economic Community. The Minister is advised by the highly-prestigious Library and Information Services Council (LISC).

As always, one cannot ignore the importance of Information Technology and hence its application to the library and information services field. All major political parties are inclined to place great stress upon the importance of IT for economic survival. Much funding for IT equipment, including quite reasonable sums for some libraries and some library schools, comes from the Information Technology Division of the Department of Trade and Industry, and I am glad to say that we have managed to initiate several research projects using IT where DTI paid for the equipment and we paid for the research. The Minister for Information Technology is Mr Pattie, whose predecessor, 3 years ago, initiated the much publicised Information Technology Year. The Alvey Directorate, to be dealt with later, also comes under him. Information Technology policy is also discussed by the Information Technology Advisory Panel (ITAP) which reports directly to the Cabinet Office, and it was as a result of a report that they produced fairly recently, and to which I shall return, that the Minister of Information Technology was also appointed as the Minister responsible for coordination of activities within the tradeable information sector. This could have far-reaching effects on those who at present consider themselves to be involved in the Information field.

The University Grants Committee affects policy on the massive library facilities in the universities, and has its own library committee, which at present is on ice. The Research Councils (for Agriculture and Food; Science and Engineering; Medicine; Economics and Social Research, and for the Natural Environment) are brought together through the Department of Education and Science. Not only do these research councils control major research libraries and information services of their own, they also control how library and information services may be purchased on research grants. The major Government Departments, too, have a great investment and interest and influence in and on library and information services - frequently beyond their own internal needs.

Then we have the professional associations. The Library Association is the oldest and the largest, and can exert great influence through its representative role and its control over the status of Chartered Librarian, which is an essential qualification for librarians working

in local government libraries, and a highly desirable one for most other libraries. The Institute of Information Scientists is a younger but no less vital organisation that provides, what had been for many years a much needed avenue, for qualification of the information workders who did not consider that their education and jobs needed the more traditional library training. Both the LA and the IIS strongly influence curriculum development at the various schools that wish to have their courses approved by these organisations. Slightly to the periphery of our main interests, but not to be ignored, there are other professional organisations such as the Society of Archivists and the Modern Records Managements Association, that also have a strong influence on curriculum development - including curricula at some of the Library Schhols.

Another body which has a strong influence on library and information activities, although it is not a professional association or a qualifying body, is Aslib, which used to have the subsidiary title of "formerly the Association of Special Libraries and Information Bureaux". It now proudly announces itself as the "Association for Information Management". As is also the case with the Library Association, the short courses and meetings provided by Aslib are an invaluable contribution to the continuing education needs of libraries and information workers.

Other bodies in the UK affecting information provision and policy indirectly include British Telecom, because of the facilities they provide (or, in some cases, do not) and the pricing policies that they adopt; and the Home Office because of its legislative position as far as communications are concerned.

Several Reports have been produced in the UK in recent years that have had, or will have, a profound effect on the library and information field in our country. I have selected three of these as being those with the greatest potential impact. The first is a major report published by the Library and Information Services Council (LISC) in 1982, and entitled "The Future Development of Libraries and Information Services". Basically, this consisted of two reports - the first on the organisational and policy framework within the United Kingdom, and the second under the title

"Working together within a National Framework". These reports soon became known as FD1 and FD2, respectively. FD2 provided a basis for discussion that is still going on - it emphasised the changes that were taking place in the library and information world, and particularly the effects of Information Technology and ecnomic constraints as the two greatest factors for change. It made many recommendations for policy and research directions. The major policy thrust of this report was that there should be a definitive change in approach from a holdings policy to an access policy in developing a national library and information network.

The second report that I would like to touch upon is the Alvey Report - named after the Chairman of the Committee that produced it. The report was produced as an answer to the perceived threat of competition in the production of fifth generation computers. It recommended a massive programme of research and development within the UK, aimed at progressing the four vital enabling technologies of Man-Machine Interface; Software Engineering; Very Large System Integration (VLSI); and Intelligent Knowledge Based Systems. All of these have great potential implications for the Library and Information Services field, but particularly the first and the last, i.e. Man-Machine Interaction and IKBS - overlap with research approaches already being carried out in the Library and Information Services field. As a result of this report, an Alvey Directorate was established in the Department of Trade and Industry, and it is intended to spend about 420 million dollars on this programme over the next five years.

The third policy report I have already mentioned in passing. This is the report from the Cabinet Office's Information Technology Advisory Panel, entitled "Making a Business of Information". Although considered wrong-headed by many readers, this report was one of the first to the UK Government that recognised the value of information rather than stressing the value of Information Technology. It perhaps emphasised a little too much the relevance of IT in value adding to information, and, in conceiving the idea of the information industry as including the film art and broadcasting industries, perpetuated the myth of a completely integrated

information industry. I should like to stress here that I personally think that lumping all the service industries together does not help progress the aims of the information worker as we know him or her. I much prefer Y. Masuda's classification that talks of the service industries as tertiary industry, and then distinguishes the quarternary as being composed of:

information industries
knowledge industries
arts industries
and ethics industries

It is surely the first two where our real interest lies. The Knowledge/Information Industries can be taken as those engaged in the production, processing and marketing of cognitive information, and those that produce and sell the associated hardware and software.

However, with all these faults, the ITAP report was at least a catalyst in starting debate and action. At least it stated firmly that information was of value, that attention should be paid clearly to the 'I' as well as the 'T' and 'IT'; and it made government think seriously about its responsibilities for Information and Information Policy. It also made the various bodies with interests in the information market think seriously about their problems and, in response to an ITAP recommendation, to come together to form an association for the Information Industry. This body, the Confederation of Information Communications Industries (CICI), formulated its Constitution about ten months ago. The British Library got together with some of the bodies that are more directly related to its major interests to form a temporary and informal "ITAP Club". In cooperation with these bodies, we have collected data on the UK Information Industry (lack of statistics on which was noted in the ITAP Report), and produced digests of the main current problems - such as Data Protecton, Copyright, Pricing Policies, Transborder Data Flow, Standardisation, Codes of Practice etc.

I have already mentioned one aspect of the Response - the designation of a Minister responsible for Tradeable Information. There are several others that are directly relevant to the LIS profession. One is the promise to bring forward, as soon as possible, a comprehensive programme of copyright reform. Another is the

recognition that Government Departments need to audit their information capabilities to see if more information can be made available on a commercial basis.

From the profession's point of view, perhaps the most cheering statements come from Section 9: "The Government agrees that more attention needs to be paid to the information itself"; and Section 11: "The Government acknowledges the importance of information in the economic, social and cultural activities of the country".

This, then, is the context within which the Library Research Support mechanism has to work, what of the mechanism itself?

The R & D Department is a small, relatively independent part of the British National Library. It was basically formed in 1974 by the absorption of the staff and objectives of the Office for Scientific and Technical Information, then part of the Department of Education and Science. The main visible parts of the British Library are the three operational Divisions - for Reference; for Lending; and for Bibliographic Services. The BL, which probably has the widest range of responsibilities of any of the great national libraries, has an annual turnover of over 60 million dollars, and a staff of 2,500.

In spite of our title, we do no research work for the British Library although we do help to coordinate the research efforts of the individual Divisions through the Standing Committee on British Library Research which comes under my chairmanship. Rather, we are essentially a research-funding body - it is difficult to find an analogy in other countries, but in many ways, when compared with the USA, we combine the functions of the Council on Library Resources and the NSF's Division of Information Science and Technology. Additionally, we have some coordination functions that parallel those of the National Commission. We are, in fact, the major funding body for LIS research in the UK - a survey conducted for us two years ago showed over 50% of all Library Research projects were supported by the Department, but that we in fact provided approximately 80% of the research funds in this area.

The Department has a staff of 24, 12 of whom are professionals, and a budget of approximately 2 million dollars, of which 1.7 million dollars are disbursed in research grants and contracts. If I had to encapsulate our aims in one sentence - as you once had to with Management by Objectives it would be "By the support of research, development, demonstration and dissemination to provide data that enables the improvement of information flow".

You will note that I do not mention policy or planning in this statement. We have no direct responsibility for either of these two areas. To us falls the responsibility for providing data for decision; to all the bodies I mentioned earlier is the responsibility for applying this data - the digested results of research - in order to change their policies, their plans and their development strategies.

As money for the support of research has become tighter and as the calls upon it have become heavier, so we have had to more and more produce consultative mechanisms that enable us to gauge the needs of these policy and planning bodies. Because I think that such mechanisms are very important, I should like to detail the ones we are using.

First, the Department has a very valuable Advisory Committee which, broadly speaking, represents both the processors of information and the ultimate users - be they academics, industrialists, or general public. This Committee meets at least three times a year. A working party of the Committee has been set up to survey the work of the Department and the expressed needs of society. This working party has set up a series of priorities for the next five years, and these priorities are assessed annually in terms of progress and changing needs. I shall come back to these priorities later.

Other committees and groups that we use for consultative purposes include:

The Information Technology Applications Committee
(with two important sub-committees - for LIS
applications, and Book Trade applications)

The Group for Research in Public Libraries

Discussion Group for New Technology in Library Schools

Management Education and Training Research Group

Discussion Group for Research in Educating Information
Users in Schools.

Additionally, we set up short term Review Panels, usually with a full-time Research Officer, in various subject areas. These bring together specialist information professionals and subject experts and user representatives to discuss information needs and problems and to suggest research projects aimed at solving these problems. We have organised these, for example, in Chemistry, Physics, Biology, Agriculture and Medicine. The current one is for that rather difficult area called "Family Studies".

A good example of the complexities of coordinating effort in this field is presented by the Information Technology Applications Committee, where we bring together representatives from the library and information world and the book trade, users and representatives of other major funding and policy organisations such as British Telecom, the Office of Arts and Libraries, the Department of Trade and Industry IT Division, and the Alvey Directorate.

All of these mechanisms provide two-way communication. First, they enable us the gauge the current research needs fo the various communities that they serve and to respond to these needs. Secondly, they enable us to feed back to these communities the results of research supported by us and thus affect the development of services etc. in a particular area. Even these mechanisms are not enough, however, and we ensure that relevant research information is also fed directly to, for instance, the Library and Information Services Council, to the Department of Education and Science and to the relevant other Government Departments.

Library and Information Policy as such is rapidly becoming of great interest in the United Kingdom and in recognition of this, we have recently included in our high priority areas for support a new Programme on Library and Information Policy Research which has been built up from existing research programmes that covered library policy research, information policy research and economics of information.

Our other high priority areas consist of research the applications and implications of information technology (including electronic publishing and library automation); industrial, business and commercial information research, bearing in mind the value of information for the economic development of the country; and basic and strategic information research which examinies the underlying principles of information storage and retrieval, with a longer term aim of developing more effective systems. The dissemination of research results is also given high priority because the Department considers that its role does not finish when projects are completed and reports received, but that effort must be put into ensuring the appreciation and take-up of results.

Apart from the dissemination processes which I have already mentioned, we have gradually evolved a full programme consisting of different methods of dissemination. For instance, we receive about 100 research reports a year. All of these are deposited at the British Library Lending Division in a special series and details are made available extensively in the professional press. Additionally, about 15 of these are formally published each year in our Library and Information Research Series. We also commission Research Reviews that bring together the results of research from several projects (eg Library Automation, New Technology Applications and User Education in Schools). As a service to the profession we are also producing a series of "Information Technology Fact Sheets" that are intended to painlessly up-date readers on new technologies and their applications to, and implications for, Library and Information Services.

The dissemination method that is the most important to us, however, is the meeting - whether it be the talk, seminar, workshop or full scale conference. In the last 12 months we have organised, or caused to be organised, 75 of these. They are important because not only do they prove and effective method of dissemination, but they also allow us to receive a tremendous amount of feed-back from the participants - a very important source of information that enables us to react to the needs of both the library and information community and the information user, thus more effectively developing our planning.

So much for our experience, what can I offer from this to other countries and situations? The first lesson we have learned is that the body responsible for support and coordination of library research can be separate from the policy and planning bodies that are responsible for the development of national services. As I have already noted, there is no single focus within the U.K. for library and information policy anyway, but our present position as a relatively independent body within the British Library provides an interesting comparison with our predecessor - the Office for Scientific and Technical Information which was placed within a policy-making Department - that for Education and Science. What we have learned is that we need to have established effective links with all the policy making bodies, through both formal and informal channels, to ensure that a free two-way flow of information exists between us and them and that they are effectively kept abreast of research results.

This same need for effective communication also exists with regard to the practising community of librarians and information staff - we need their advice and indications of their research needs. This is done through the formal committees we have set up, through refereeing procedures for grant applications and through the attendance of R&DD staff at conferences and seminars . There is also the need to provide for efficient feed-back on the results of research already supported.

We have also learned of the need for effective intelligence services on activities that are sometimes considered to be outside the immediate province of the library field. This is especially true, of course, with regard to developments in information technology which frequently impinge more rapidly on the library world than any of us would wish. For this reason, we have established our own Information Analysis Centre on Information Technology to keep us up-to-date and to digest the implications of all new developments for our own research field. It is from this activity that the IT fact sheets that I mentioned earlier have come. We also monitor all public policy documents coming from Government for any implications for the library and information field so that we can be ready with relevant research.

What we have learned most of all, however, is that the whole field of research aimed at the development of library and information services is too large for us to look at it purely in a national context. We have neither the necessary funds nor the manpower to effectively tackle all the problems that face us - nor, may I suggest, has any other country. For this reason we actively seek cooperation with similar bodies in other countries within and without the CEC and have a series of agreements for parallel research funding with many of these. This international approach I would actively commend to all countries.

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